

BCM SCHOOL, BASANT AVENUE, DUGRI, LUDHIANA.

JULY ASSIGNMENT

CLASS- X (MATHEMATICS)

TOPICS: COORDINATE GEOMETRY & PROBABILITY

SECTION –A (MULTIPLE CHOICE QUESTIONS)

1. A number  $x$  is chosen at random from the numbers  $-3, -2, -1, 0, 1, 2, 3$ , the probability that  $x^2 < 4$  is:  
(A)  $\frac{5}{7}$  (B)  $\frac{3}{7}$  (C)  $\frac{4}{7}$  (D)  $\frac{1}{7}$
2. The probability of getting 53 Sundays in a non- leap year:  
(A)  $\frac{1}{7}$  (B)  $\frac{2}{365}$  (C)  $\frac{2}{7}$  (D)  $\frac{1}{365}$
3. The distance between the points  $(a\cos\theta + b\sin\theta, 0)$  and  $(0, a\sin\theta - b\cos\theta)$  is:  
(A)  $a^2 + b^2$  (B)  $a^2 - b^2$  (C)  $\sqrt{a^2 - b^2}$  (D)  $\sqrt{a^2 + b^2}$

SECTION B( 2 MARKS QUESTIONS)

4. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double than that of red ball, find the number of balls in a bag.
5. If the point  $P(x,y)$  is equidistant from the points  $A(a+b, b-a)$  and  $B(a-b, a+b)$ . Prove that  $bx = ay$ .


SECTION – C (3 MARKS QUESTIONS)

6. Each of the letters of the word 'AUTHORIZES' is written on identical circular discs and put in a bag. They are well shuffled. If a disc is drawn at random from the bag, what is the probability that the letter drawn is:  
(A) A vowel?  
(B) One of the first 9 letters of the English alphabet which appears in the given word?  
(C) One of the last 9 letters of the English alphabet which appears in the given word?
7. In what ratio the line  $2x+3y-5=0$  divides the line segment joining the points  $(8,-9)$  and  $(2,1)$ . Also, find the coordinates of point of division.

SECTION – D (5 MARKS QUESTIONS)

8. If  $(-4,3)$  and  $(4,3)$  are two vertices of an equilateral triangle, find the coordinates of the third, given that origin lies in the interior of the triangle.
9. A card is drawn from a well shuffled deck of 52 cards. Find the probability that the card drawn is:  
(A) Neither a king nor queen.  
(B) Non face card of red color.  
(C) A card of spade or an ace.  
(D) A card of clubs  
(E) 10 of hearts.

SECTION – E (CASE STUDY)

10. **CASE STUDY:**
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- The modern day cubical dice originated in China and have been dated back as early as 600 BC. Dice were handcrafted and produced on a small scale up until the twentieth century. A pair of dice is rolled.
- Based on the above information, answer the following question.
- (A) What will the probability of getting a doublet of prime numbers?  
(B) What is the probability of getting a product of 12?  
(C) What is the probability of sum of the numbers appearing on dice is 18?  
(D) What is the probability that the product of the numbers is a perfect square?

